Clinical Value of the Bacillus of Tuberculosis.

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CLINICAL VALUE OF THE BACILLUS OF TUBERCULOSIS.

By A. K. Stone, A.M., M.D.

I wish by the narration of a few cases which have fallen under my observation to show what a valuable aid in diagnosis the presence of the tubercle bacilli can be. The cases have occurred both in private and hospital practice, and I have to thank the physicians for permission to use the material.

Case I. The first case which I shall present came to the Boston City Hospital in February, 1887. The patient was a well-built man of twenty-two years. There was no phthisis in his family. He, himself, had never been sick before. He was a bar-tender, and drank some liquor every day, otherwise his personal history was good. For some two weeks previous to his entrance, he had not felt quite like himself, but he had had absolutely no cough, though during the winter he had had several "colds."

One week before, he had several times vomited (?) bright blood in considerable amounts. At the time of the examination he was weak, but felt first-rate. He had "no cough," but raised from time to time a small amount of sputa streaked with blood. There were signs of consolidation at the right apex, consisting of dulness, extending a broad finger's breadth below the clavicle, whispered and spoken broncophony, with broncho and broncho-vesicular breathing over this area, and a few moist râles in the back.

Such was the result of my examination, for the case had been given me as a "clinical case," and I gave my diagnosis as phthisis.

To my great discomfort, the physician in charge of the case had a different opinion, and overthrew all the weak arguments advanced in the support of the theory of phthisis. Indeed, as I found later, the patient had been presented to the third-year

students on the previous day, as a well-marked case of pneumonia with the unusual symptom of severe hæmoptysis. Though unable to hold my ground in argument, I was unconvinced, and after the hour procured a specimen of the sputum, which, on examination, showed the tubercle bacilli in small numbers, yet easily found in each preparation. A week later the official diagnosis had been changed, on account of the pneumonia showing no tendency to resolve.

Case II. was a private patient of Dr. Greenleaf's. A young man, with both parents alive and well advanced in years. He, himself, was tall and thin; a lawyer by profession. He had been steadily at work through the summer, and though of late he had not been feeling quite as well as usual, attributed it to a slight pharyngitis, and to his need of a vacation.

About the last of August, he suddenly, and without any previous sickness, spit up several teaspoonfuls of clear blood. So little was he disturbed by this occurrence that he came to town and tried to work, but after a few hours he gave it up and called upon the doctor. He was promptly sent home and sent to bed, and the next day a physical examination was made, which failed to disclose any abnormal physical signs in the chest. During the next few days the patient from time to time, and without any cough, spit up a little blood. At the end of about three days there appeared a slight cough and a small amount of sputa.

Meanwhile, the patient was much displeased with being kept in bed, as he felt perfectly well. I was asked to make an examination so that all possibility of phthisis could be eliminated. But the examination showed the presence of tubercle bacilli in small numbers. I will add that at the present writing, over a month from the first attack, the only sign of trouble is a persistent slight cough, while repeated physical examinations have failed to detect any modification of either resonance or respiratory sounds.

Case III. A few weeks ago a boy of sixteen years came to the Massachusetts General Hospital, out-patient department, service of Dr. Ernst. Up to one week before, he had been quite well, when he had an attack of vomiting accompanied by

headache. During the week he had had two slight hemorrhages. He had, the day he presented himself, a hot, moist skin; some cough, with bloody expectoration; severe pain in the right chest; a temperature of 100°, and a pulse of 90.

Physical examination showed diminished resonance over the whole right chest, vocal fremitus and resonance both slightly increased, and moist râles, both coarse and fine, were present.

The general condition of the patient suggested pneumonia, and directions were accordingly given for treatment. But partly from the element of doubt which presented itself, and partly as an exercise in differential diagnosis with the microscope, Mr. Rowen, Dr. Ernst's assistant, was asked to stain some of the sputum to see whether the pneumo-coccus or the tubercle bacillus could be found, and numerous bacilli of tuberculosis were found, thus giving a positive diagnosis.

The next two cases illustrate the assistance which an examination of the urine for the tubercle bacilli may give in certain genito-urinary troubles.

The first patient appeared at the Massachusetts General Hospital, in the service of Dr. Beach. He was a carpenter of forty-six years of age, with good family history, and good general health till within the last six months. There was no venereal history whatever. Four years ago he had had a fall on some rocks, which had caused pain and swelling of the penis and perineum, accompanied by a slight urethral discharge. All of these symptoms, however, disappeared at the end of two months. Five months before the entrance to the hospital there was gradual increasing frequency of micturition, accompanied by some pain and smarting. He had been treated by the passage of sounds, but the symptoms of acute cystitis steadily increased until there was necessity for micturition every hour. On entrance, the heart and lungs were found normal, and the urine, according to Dr. Wood's examination, had much sediment; a specific gravity of 1,024; was acid; had a trace of albumen, and also of sugar; while the sediment consisted of an excess of small, round cells, bladder epithelium, a few blood globules.

During the next three weeks the condition improved a little, the temperature was normal, and the cystitis was less severe.

A few hyaline casts appeared in the urine, which otherwise remained as before, excepting that the sugar had disappeared. Repeated physical examinations by the medical staff gave no clue to the general condition of the patient, and examination with the *dry lens* failed to show any tubercle bacilli. At the end of a month and a half there was no marked change, excepting that the patient's strength had gradually but surely failed, while the temperature had gradually increased till it was 101°-102° each evening. Dr. Beach made up his mind that it was not a surgical case, all medical authority to the contrary, and sent the urine for a bacterial examination, with the result that tubercle bacilli were found present in moderately large numbers, thus establishing a diagnosis.

The second case occurred in the private practice of Dr. F. C. Shattuck. It was an ordinary case of pulmonary phthisis, which had been running about a year and a half when a cystitis suddenly appeared, persistent and severe from the first. An examination of the urine at once showed the presence of the tubercle bacilli, and made the diagnosis of tubercular cystitis.

The two following cases show that the absence of the tubercle bacilli may prove an important factor in settling a difficult diagnosis.

The first occurred in the service of Dr. F. C. Shattuck, at the Massachusetts General Hospital. The patient was an Irishman, about forty-eight years of age, with a negative family history, who had had no previous sickness, excepting pleurisy, twenty-five years before. He entered the hospital December, 1886. The patient stated that four weeks previously he had taken a severe cold, and had coughed a good deal and felt very weak. At the end of a week he had a chill, which was followed by fever. A constant pain came in the left side, which was increased and lancinating on cough or deep inspiration. On entrance, there was pain on the left side, a slight cough with a small amount of white and frothy expectoration, headache and shortness of breath. The physical examination was as follows: the left chest expanded less than the right; below the angle of the scapular to the junction of the fourth rib with the sternum there was flatness, absence of respiration and of vocal fremitus, otherwise normal. Heart was moved a little to the right. The

expectoration gradually became sero-purulent, and the area of flatness extended while the patient began to have night-sweats.

Jan. 7, 1887, I examined the sputa, and found no evidence of the tubercle bacilli, though other bacteria were found in large numbers. This report so surprised the physicians that the sputa was again examined, Jan. 17, but with similar result. Meanwhile, the flat area became somewhat less, and on Jan. 22, the patient was reported as gaining in strength, with respiration to the very base of the left lung, with moist and dry râles. By Feb. 4 there was no cough, and no night-sweats, with only a slight dulness at the base, and with fair respiration everywhere present, and only a few dry râles. On this date the patient was sent to the Convalescent Home, where he continued to improve steadily, and was finally discharged, weighing one hundred and seventy-nine pounds, or thirty-one pounds more than he weighed when he first was able to sit up, and nineteen pounds more than when he left the hospital.

The sputum from the following case was sent to Dr. Ernst by Dr. D. W. Cheever, with the simple request that it should be examined for the tubercle bacilli. Careful examination, however, failed to show any, but Dr. Ernst was struck by the large number of cocci which appeared to have a capsule; probably Friedländer's pneumo-cocci. The result of the examination, and the conjecture that the sputum came from a pneumonic process was returned, together with the request that there should be another specimen of the sputum sent, together with some account of the case. Dr. Cheever replied that it was a case in which a diagnosis of phthisis had been made, and indeed the tubercle bacilli were reported to have been found (but this was probably due to a dry lens). Dr. Cheever was inclined to think the case one of chronic pneumonia, and sent the sputum for examination, with the complete confirmation of his opinion.

The patient from this time on began to gain so rapidly that no more sputum could be obtained for further examination, and to-day, Sept. 21, the man has completely recovered, and is enjoying perfect health.[1]

[1] This case is mentioned in the Proceedings of the Association of American Physicians, 1890.

A large number of cases — ordinary, every-day cases — might be given, where an early and sure diagnosis has been made by the sputum examination; but enough have been cited to show to any one who has taken the trouble to read the above, that the presence or absence of the tubercle bacilli is often of the greatest importance in settling difficult diagnoses, and, what is of more importance, making the prognosis and line of treatment clear.

One word as to the methods. To learn to stain the bacilli is not a difficult task, and when they have been well stained it is not hard to recognize them, provided one has sufficient light and a suitable lens. But it is absolutely useless, and will lead the observer into all kinds of error, to attempt to search for the tubercle bacilli if he does not have a sub-stage illuminator and an oil emersion lens. Where the bacilli are present in large numbers (and I have seen them in such large masses in sputum as to be recognized with a Zeiss A. A. objective), they can be seen with a dry lens. But when there are only four or five in a cover-glass preparation, though these may be perfectly typical in form and color, it is very easy to entirely overlook them, or else to call them bits of colored detritus; while in cases where none are present, small crystals and dirt can too easily take on the appearance of bacilli, and lead to a false diagnosis, and, what is of more importance, cause an unfavorable prognosis.